

**From:** [Candon Tanaka](#)  
**To:** [Kissinger, Lon](#); [Eberhardt, Maja](#)  
**Subject:** RE: Selenium Aquatic Life Criteria and Risk-Based Allowable Daily Consumption  
**Date:** Wednesday, August 14, 2019 8:01:44 AM

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Hello Lon,

I knew I was missing something. Thanks for lining me out. Talk to you tomorrow.

Thanks,

Candon Tanaka

Water Quality Specialist

Shoshone-Bannock Tribes

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**From:** Kissinger, Lon <[Kissinger.Lon@epa.gov](mailto:Kissinger.Lon@epa.gov)>

**Sent:** Tuesday, August 13, 2019 4:59 PM

**To:** Candon Tanaka <[ctanaka@sbtribes.com](mailto:ctanaka@sbtribes.com)>; Eberhardt, Maja <[eberhardt.maja@epa.gov](mailto:eberhardt.maja@epa.gov)>

**Subject:** RE: Selenium Aquatic Life Criteria and Risk-Based Allowable Daily Consumption

Hi Candon,

In looking at these data a consideration might be as to how the selenium concentrations are expressed. It looks like the value in the table are dry weight. A cursory glance at EPA's guidance for fish consumption advisories shows that advisories for chemicals are based on wet weight concentrations. Fish tissue is about 70% water (based on a quick internet search) and thus 30% solids.

So...

$$C_{\text{dry}} = \text{mg Se} / \text{wt}_{\text{solids}}$$

$$C_{\text{dry}} = \text{mg Se} / (0.3 \times \text{wt}_{\text{total}})$$

$$C_{\text{wet}} = \text{mg Se} / \text{wt}_{\text{total}}$$

$$C_{\text{dry}} = C_{\text{wet}} / 0.3$$

$$C_{\text{wet}} = C_{\text{dry}} \times 0.3$$

See if multiplying the dry concentrations by 0.3 to convert them to wet weight makes a difference in determining safety.

We can talk about this more on Thursday as well as other interesting things...

Hope you're well!

Lon Kissinger

Risk Assessor

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**From:** Candon Tanaka <[ctanaka@sbtribes.com](mailto:ctanaka@sbtribes.com)>

**Sent:** Tuesday, August 13, 2019 3:41 PM

**To:** Eberhardt, Maja <[eberhardt.maja@epa.gov](mailto:eberhardt.maja@epa.gov)>; Kissinger, Lon <[Kissinger.Lon@epa.gov](mailto:Kissinger.Lon@epa.gov)>

**Subject:** Selenium Aquatic Life Criteria and Risk-Based Allowable Daily Consumption

Hi Maja and Lon,

Someone from our fisheries department posed a question to me regarding IDEQ's Aquatic Life Criteria. As you may or may not know EPA recently approved IDEQ's Aquatic Life Criteria for Selenium, contained in the table below:

	Fish Tissue			Chronic Water Column	
	Egg/Ovary (mg/kg/dw)	Whole-Body (mg/kg/dw)	Muscle (mg/kg/dw)	Lotic Waters (µg/L)	Lentic Waters (µg/L)
Idaho Statewide/ EPA National Criterion	15.1	8.5	11.3	3.1	1.5
1. Sturgeon-absent SSC	19.0	9.5	13.1	3.1	1.5
2. Upper Blackfoot River Watershed (above Blackfoot Reservoir)	24.5	12.5	12.8	3.1*	1.5*
3. Georgetown Creek	21.0	12.5	12.8	3.1*	1.5*
4. Sage, Hoopes, NF Sage and Pole Creeks	20.5	13.6	11.3	16.7	1.5
5. Crow Creek	20.5	12.5	11.3	4.2	1.5
Idaho's Current Criteria				Acute	Chronic
				20	5
*the values would in effect until future water column values are developed using a performance-based approach from tissue values via either the mechanistic modeling or empirical bioaccumulation factor method based on Appendix K of EPA's 2016 Se criterion document. Future water column SSC for these waters developed by DEQ would not be adopted or submitted to EPA for review and action.					

The question I received was "are the fish are safe to consume at these levels"? Based on the fact that these are aquatic life criteria and not human health criteria(HHC), I was not sure how to answer that. I also could not identify the equations the HHC calculator on EPA's Tools for Tribes webpage is using. So I looked at EPAs "Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories Volume 2 Risk Assessment and Fish Consumption Limits Third Edition" (<https://www.epa.gov/sites/production/files/2018-11/documents/guidance-assess-chemical-contaminant-vol2-third-edition.pdf>) to try and figure it out. Based on the equation found in section 3.2.2.1, I found that none of the values found in the "muscle" column from the table above would be safe to consume. Using the 3.2.2.1 equation the way I understand it, anything over 35.39 grams/day consumption would not be safe. I used the following variables: RfD=0.005, BW=80, Cm=11.3. That assumes my math is correct and I'm not missing something, but I easy could be. I hope you can shed some light on my situation and what the equations are behind EPA's Tools for Tribes-HHC calculator are. Talk to you soon.

Thanks,

Candon Tanaka

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